ONERA

THE FRENCH AEROSPACE LAB

JOB OFFER: RESEARCH PERMANENT POSITION ON NOC AND EMBEDDED NETWORKS

DÉPARTEMENT TRAITEMENT DE L'INFORMATION ET MODÉLISATION (DTIM)

TOULOUSE/ FRANCE

ONERA (Office National d'Etudes et Recherches Aérospatiales) is the French national aerospace research center. It is a public research establishment, with eight major facilities in France and about 2,000 employees, including 1,500 scientists, engineers and technicians.

The position is opened in the LAPS group (Langages, Architectures et Proofs for embbeded Systems) in the Modeling and Information Processing Department (DTIM), to do research in the evaluation of Network on Chip (NoC) and networks, embedded in aircrafts, spacecrafts, UAVs....

The core of the work consists in researching new methods for mastering time predictability and deterministic execution of critical applications in embedded systems. One major evolution in these systems is the shift from buses to networks, to interconnect either computers or CPUs inside a chip. This new paradigm changes the way to control the communication time. It requires a fine understanding of the NoC behaviour, and its interactions with other chip components and executed code.

Since aircrafts must, in general, pass a certification process, the evaluation of network traversal time is commonly done using formal methods. But some experimentation and measurements also give complementary expertise. The knowledge gained from these studies can be used to define new communication mechanisms and architectures, as well as design rules, for embedded distributed systems

The research activity will consist of:
- the evaluation of the worst case communication performance (for NoCs and embedded networks) ;
- design of mechanisms and protocols ensuring the applications requirements (response time, safety...) ;
- implementation or prototyping, either on real systems or by simulation.

REQUIRED SKILLS and QUALIFICATIONS

PhD in computer science, with some background in networking, and some publications related to NoC. Appetite for experimentation. Aware of aeronautical industrial requirements.

Competences in one or several of the following techniques is required:
- formal worst case communication evaluation methods (network calculus, real-time calculus, event stream, trajectorial approaches, etc.);
- multi- and many-core architectures, and especially NoCs;
- embedded networks;
- simulation framework for real-time systems;
- programming (C, C++, Java...) ;
- formal methods.

Applicants must have a good English level, French is not a requirement as long as English is OK.

Application process:

The reference to indicate in all application documents is ITS/DTIM/LAPS/CDI//2224.
Applicants must upload their CV and motivation letter through the ONERA website at http://www.onera.fr/fr/rejoindre-onera/offres-emploi to the offer "INGENIEUR DE RECHERCHE RESEAUX SUR PUCE ET EMBARQUES"